Standard of Integrity

Some people think integrity means to refrain from lying. They are right, to an extent—about 10 percent. Integrity is much, much more than simply not lying. It means telling the whole truth, unsolicited, even when it hurts you or someone else. It means not allowing someone to be misled or misinformed. Integrity is pro-active.

Integrity is the bedrock of an effective military organization. In training, it is a soldier's integrity that forces him to accurately record and report shortcomings and problems so they can be addressed and solved. In maintenance, it forces him to do the boring, seemingly inconsequential checks that may make the difference between combat readiness and deadlined equipment. Integrity spurs initiative and efficiency in everyday activities. When leaders can trust their men, they spend less time checking and more time doing.

Integrity fosters trust. Trust breeds cohesion. Cohesion is a critical indicator of how a unit will fight (and survive) in combat. Soldiers need to know that they can count on one another. Integrity is infectious, part of a unit's culture. Practice it, encourage and enforce it, and it will become our way of doing business.

In this unit, integrity in its purest form is the standard. Our job (and our lives) are too important to accept anything less.

I am not so naive that I think everyone will internalize this concept of integrity. But I do expect that every soldier will conduct himself by it.

tunities open to the soldier. Tell them about his state of health and about his upcoming promotion. Thank them for being his teachers and role models. End with an invitation for them to write to you with any concerns they may have.

Your soldiers will appreciate having you do the bragging for them. On leave, they will arrive home heroes, and they will owe it to you. That same sense of "going the extra mile" for each other will foster the personal and professional bonds that pay off in combat.

Most parents are powerful allies for an Army leader. Their encouragement and pride are often a significant source of motivation for your soldiers. Their advice may tip the scales when it comes to reenlistment decisions. Additionally, soldiers who know you are in touch with their parents may think twice before doing something stupid. The small effort in writing their parents pays big dividends in loyalty, motivation, and conduct.

For a soldier leaving your unit, writing a letter of recommendation—to a prospective employer or a college director of admissions—may be the easiest way to demonstrate your genuine concern for his welfare. He has nothing more to offer you, yet you continue to help him. It is the right thing to do. For a soldier who is leaving the service, that letter will be much more valuable than his award in securing civilian employment and schooling.

The time and effort you spend writing letters of recommendation will result in better cohesion within your unit. Your men will see that you care about them, and this will promote vertical bonding. They will be happy to work for someone who makes the extra effort to help them out.

Building cohesiveness in your unit is critically important. By making the extra effort to establish an integrity standard, write letters home, and write letters of recommendation, you will set some conditions that both foster cohesiveness and help the unit accomplish its mission.

Captain Peter G. Kilner is assigned to the 2d Battalion, 325th Infantry, 82d Airborne Division. He previously served as a Bradley platoon leader and as a scout platoon leader in the 4th Battalion, 8th Infantry, 1st Armored Division. He is a 1990 graduate of the United States Military Academy.

Innovations
From Operation DESERT STORM

CAPTAIN JOHN R. SUTHERLAND, III

Armed conflict and the pursuit of victory (or at least survival) have produced numerous innovations that have led to advancements in all fields of human endeavor. The most obvious area of interest is the improvement of warmaking tools.

The Civil War brought us the minie ball, rifled muskets, primitive hand grenades, and prototype submarines. World War I ushered in the tank, and World War II introduced guided

missiles, V-2 rockets, jet aircraft, shoulder-fired antitank systems, and the atomic bomb. Korea saw the use of the helicopter, and Vietnam brought us the M16 rifle and the CH-47 and AC-130 gunships, with their direct fire systems.

On a grand scale, I suppose the real innovations to come out of Operation DESERT STORM will be in the fields of digitization and strategic lift, two pronounced weaknesses identified during the operation. But several existing systems were tested and proved under combat conditions in this war—the M1 tank, the M2 Bradley fighting vehicle (BFV), the multiple launch rocket system, the heavy expanded mobility tactical truck (HEMTT), the high-mobility multipurpose wheeled vehicle (HMMWV), and J-STARS. A lot of smaller, and perhaps even more revolutionary, systems were also proved—such as the global positioning system (GPS).

I offer here less ambitious innovations that were developed at company level during Operations DESERT SHIELD and DESERT STORM. None of them are revolutionary. Certainly, none will change the face of war as much as did the invention of the machinegun and the tank, but they nevertheless helped us do our job better.

What all of these little inventions have in common is that they make sense, they're cheap, and they improve the chances of survival and success for the infantrymen who use them.

The Hot Box

When the 3d Battalion, 15th Infantry, 24th Infantry Division, was alerted for deployment on 6 August 1990, we packed heavy. We were to be the lead battalion task force of the division's lead brigade. Our positions would be an hour's drive away from Ad Dammam, out in the desert; there was no real logistics base yet, and none was expected to be ready any time soon. The Bradleys were therefore loaded down with all classes of supply.

A fully combat loaded M2 Bradley that is being shipped 7,000 miles to an immature theater of operations, and that faces the possibility of combat immediately upon arrival, must be prepared to sustain itself, its crew, and its infantry rifle team. It is therefore short of space. The M2 strapping plan, which made the most of the space available, was the basis for the load plan, but it was still not enough for the total needs of the fighters in this situation.

One of the hungriest space eaters was the number of 25mm ammunition boxes. Thirty 30-round boxes were needed to fill the Bradley's unit basic load of 900 rounds. When Class V supplies for the TOWs, AT4s, and all the rifle teams were added, the vehicle was packed. The 25mm boxes were strapped to the walls of the Bradley and stored under the floorboards. When the vehicle was maneuvering over rough terrain, some of these boxes would shake loose from their bindings, careen around the rear of the vehicle, and pummel the infantrymen in the back.

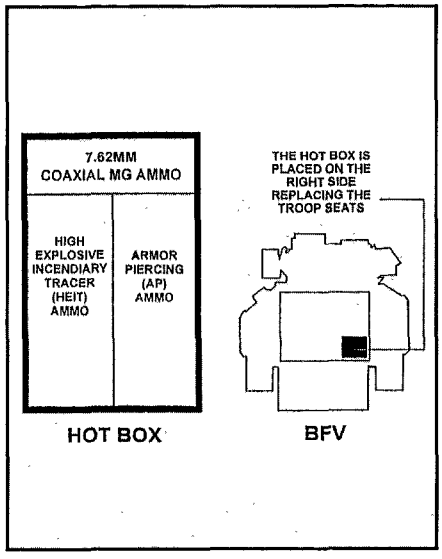

Figure 1. The Hot Box

The ammunition's location also risked sympathetic detonation in the event the vehicle were penetrated by antitank systems or mines. Every BFV that was hit (so far as I know) suffered more casualties from this reaction than from the strike of the rounds themselves. In addition, the 25mm ammunition boxes were awkward to handle and slowed the reload of a buttoned-up Bradley.

The Hot Box was our solution to the storage and reload problem. It was invented by the master gunner of Company D and perfected by the soldiers of Company B. It was, essentially, a fabricated footlocker designed to store the 900 25mm rounds without using the 30 ammunition boxes. We used our overhead cover boards to create the boxes, gambling that we would be on the offense rather than the defense.

The box was sectioned off to create compartments for the 7.62mm coaxial machinegun, the 25mm armor-piercing, and the high-explosive incendiary tracer (HEIT) ammunition (Figure 1). The 30-round belts were removed from the boxes and neatly layered in their compartment. Every fifth round was marked with a wrap or two of tape; this allowed the loader to fan the ammunition in his hand, in the dark, and determine the exact number he needed for the reload. The positioning of the box and the arrangement and marking of the rounds allowed for reloading on the move, buttoned up, and in the dark.

All the troop passenger seats in the center and right of the vehicle were removed, and the Hot Box was slid into that space. Although the weight of the ammunition held the box firmly in place, rails on the bottom would allow the box to slide easily in and out and to be secured. Two or three of the old seat cushions were bolted to the lid of the box.

The Hot Box offered several advantages:

- Reloading, under all circumstances, was much simpler and faster. The ammunition was also much more accessible; there was no need to break open ammunition boxes and lay 25mm rounds on the floor of the vehicle. The marking of the rounds and the layout of the belts made it easier for the loader to count his rounds to break and hang them in the ready boxes. Our rehearsals showed a dramatic time-saving from the simplification of this task.
- We felt that the centralization of the ammunition farther inside the hull and the elimination of the ammunition boxes improved overall survivability, because the boxes that were under the floorboards were replaced by sandbags

for protection against mines.

• The infantrymen in the back of the vehicle were actually more comfortable riding on the box than on the troop seats. They had more space and easier access to their mission equipment.

• We felt that the chances for sympathetic detonation were reduced (although this was never tested), because the ammunition was in one central location instead of being spread out all over the vehicle and close to the hull. Anyone who replaces our wooden Hot Boxes with Kevlar and spall liners should be in pretty good shape.

All in all, the soldiers who used the box felt it was the best innovation, from our level, to come out of DESERT STORM.

Bradley Blow-Down Exhaust

Before my assignment to the 24th Infantry Division, I spent three years in the Mojave Desert at the National Training Center as part of the opposing force (OPFOR). During that time, I learned a lot about down-in-the-dirt maneuver.

One of our little grass roots observations was that we didn't need to see, or even hear, a Bradley to determine its location. All we needed to do was look for the exhaust plume that shoots straight up into the sky from the center

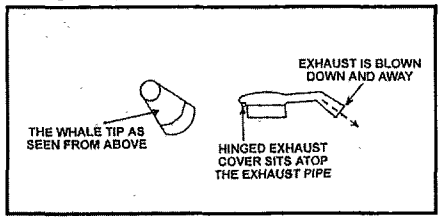

Figure 2. Bradley Blow-Down Exhaust.

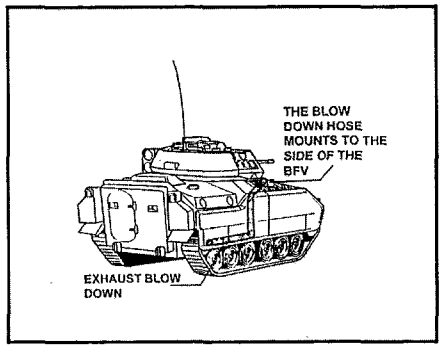

Figure 3. Flexible Hose Exhaust.

and right side of the vehicle. When the battle closed and the close-quarters wadi fighting began, this became a key identification technique for the OPFOR. Later, in the 24th, when using thermal sights, I found the signature even more pronounced.

The crews and mechanics in our unit tried to solve this problem but lacked the expertise and the material to perfect it. We did design a simple solution, which we never got to try, and saw one that another unit had instituted.

We tried to reproduce the "whale tip" that is used on the M551 Sheridan, and I still believe this was the best approach. The whale tip is a flat, triangular, downward-canted device that attaches over the exhaust on a hinged swivel (Figure 2). It resembles a vacuum cleaner attachment and is very simple.

The 3d Armored Cavalry Regiment's solution was to secure a large, flexible, metal hose to the exhaust (Figure 3). The hose, which was somewhat like a drying machine hose, guided the smoke down and to the rear of the vehicle. I didn't get close enough to see just how the system was secured, but it looked pretty solid. It forced the exhaust down and away, and the crew claimed it was effective in reducing the thermal signature.

I liked this approach but felt that the whale tip would be cheaper, tougher, and equally effective. The tubing technique was effective in the desert, but it would be vulnerable in the cargo hold of a ship or the belly of a C5 or C17.

The Backup DMD

When the scouts in the battalion traded in their M3 Bradleys for HMMWVs in 1989, the M3s went to the line companies to be used by the executive officers (XOs), and one of these was the target of our team's next upgrade.

The weak link in the Bradley-Abrams company team is the fire support vehicle (FSV), a reengineered M901 improved TOW vehicle (ITV). This vehicle is renowned for its lack of speed and its unreliable, sensitive, hammerhead. During rehearsals and offensive maneuvers, the FSV habitually fell behind the rest of the team. Some of the FSVs in the battalion were down for maintenance again and again, and usually for a longer time because of the limited number of qualified FSV and ITV mechanics. In addition, the FSV, being easily distinguishable from the rest of the team vehicles, is a high-priority target.

Realizing these weaknesses more than anyone else, my fire support team (FIST) NCO felt the need to create some redundancy in the system. The ground/vehicle laser location designator (G/VLLD) was already capable of being removed and could be backed up by hand-held laser range finders and global positioning systems (GPSs). The key system to duplicate was the digital message device (DMD) that the FIST uses to send digital fire requests through TACFIRE.

By chance, the FSV had an extra DMD as backup. The FIST NCO grabbed this spare DMD, a mechanic, the communications sergeant, and the team master gunner, and they all descended on the XO's Bradley with the intent of wiring it with the extra device. The M3 had the space for an extra radio in the back. A few cables and an extra antenna were required to complete the job.

The DMD was mounted in the troop compartment where the company NBC (nuclear, biological, chemical) NCO rode. The idea was that the NBC NCO would become the backup in the event the FSV went down to maintenance or enemy fire, picking up digital calls for fire until a member of the FIST could be cross-leveled to take over. Once the device was mounted, the FIST NCO spent three days training and drilling the NBC NCO on the operation of the DMD, and he quickly became proficient.

The company therefore had a redundant call-for-fire system at its fingertips. This allowed us to provide multiple coverage to the company and any separate platoon that might be required to operate away from the company. I actually exploited this capability during DESERT STORM when I had to send a

platoon three kilometers away from the company team to tie in a gap between two brigades along the highway that paralleled the Euphrates River. The FSV went with the platoon for the night, since it would be forward while the XO's M3 provided coverage for the rest of the team in the battle position.

This added insurance was easy to rig, cheap to install, required no extra equipment, and was an effective backup to the existing team capabilities.

The 30-Hour Thermal TRP

My unit, like all others, wrestled with the problem of developing a reliable, long-lasting, and low-maintenance thermal target reference point (TRP). We wanted a fire-and-forget TRP that would burn for an entire night without having to be serviced by a dismounted infantry squad. We also wanted a low signature that would not be easily visible to the naked eyes of enemy scouts.

Many ideas brought up with the team were rejected as too high in maintenance, too visible, or too costly to emplace. We toyed with a full range

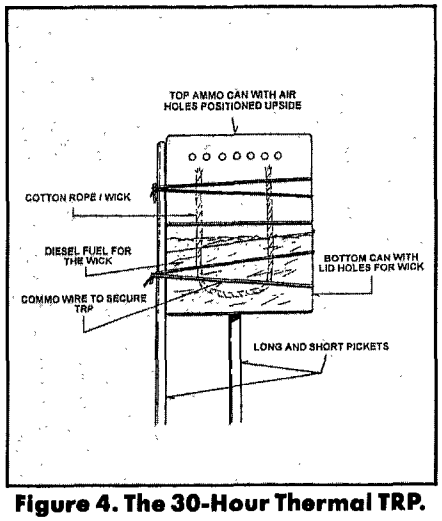

Figure 4. The 30-Hour Thermal TRP.

of possibilities—two nine-volt batteries stuck together, charcoal barrels, dry ice, medic heat pads, and fire pits.

Finally, knowing the answer was out there somewhere, I gave each platoon a week to develop its own proposal and have it ready to go. I told them the TRPs had to be made of common supply items, be easy to set up, and have a good burn time. We emplaced all of the prototypes in an imaginary engagement area and used them for a night of hasty defensive operations. The XO and I assumed the role of enemy scouts and tried to infiltrate the company position. The FSO rode in my HMMWV and used the GPS and headlights to mark calls for fire.

The best TRP proposed was based on Saudi lamps that we had purchased locally and on a class given by a live-fire observer-controller at the National Training Center. It required two 7.62mm ammunition cans, communications wire, one long picket, one short picket, some diesel fuel, and a six-to-nine-inch length of locally purchased cotton rope.

The lid was taken off one of the cans, and two large holes were added to the top of the other can. The one without a lid was placed upside down on top of the other, and small air holes were punched in its side (Figure 4). The two were wired together, with the rope threaded through the two holes in the bottom can to form a wick. The pickets were the base for the TRP and were secured to it with the communications wire.

Once ignited, this TRP provided a thermal signature for more than 30 hours without servicing. In fact, we had to put it out. It also provided virtually no signature to the naked eye. We figured out that we could punch holes in the top can in given patterns to mark a TRP as TOW, tank main gun, or Bradley 25mm chain gun. This made our defenses much easier to mark and sustain, and it eliminated the need to send infantrymen into the engagement area to relight TRPs.

Other Tips

In addition to these major innovations, I also offer the following tips:

- The GPS is excellent for rehearsing and verifying an engagement area. It can be used to pinpoint obstacles, dead space, and TRPs: The XO drives the engagement area under observation from the battle positions. He traces all of the trigger lines and when two out of three battle positions lose sight of him, he notes the grid and distance of dead space until he is visible again. This area is then plotted as an obstacle or artillery target.
- The BFV or tank turret can be used as a compass. A crew member walks from the vehicle out 100 meters on the projected azimuth and then shoots a back azimuth to the turret to verify the heading. The vehicle commander then lays the gun on the soldier and engages the turret stabilizer on the gun. The gun tube will be trained on the right heading wherever the vehicle goes. The commander just keeps the barrel pointing center and dead ahead.
- Nautical compasses from boats can be mounted inside the turret of a combat vehicle. Calibrated to compensate for the vehicle's magnetic field, they can be reliable on-board compasses.
- Firing port weapons are excellent for clearing trenches and bunkers. These weapons are small and light, and they put out a high rate and volume of fire. A unit must carry a rucksack full of loaded magazines and two weapons per clearing team. The lead team must have an antenna with a flag on it protruding from the trench so the BFVs can walk fires in front of their advance, and each team must be able to mark cleared bunkers and turns in the trench.
- Smoke pots can be used to back up on-board smoke. They can be secured to the rear and electrically detonated with communications wire and a nine-volt battery. Or one can be kept on the turret with the Bradley commander, who lights it with the striker and discards it once it has burned out. This is helpful for controlling the position and volume of smoke on a breach lane.
- Tanks and Bradleys can easily drive right through six strands of concertina wire, stacked two high. The skirts on the BFVs must be bolted up so the wire

What all of these little inventions have in common is that they make sense, they're cheap, and they improve the chances of survival and success for the infantrymen who use them.

won't get caught up in the road wheels. So long as there are no mines, there is no need to stop.

• The BUDD light is an excellent means of marking vehicles within the task force formation. All that is required is a little tape, a nine-volt battery, and an MRE bean component box to make a hood (the IR light is very bright). When used with AN/PVS-7s, the light makes an excellent IR flashlight for clearing bunkers and trenches.

Many other lessons were learned during Operation DESERT STORM that could be exploited in the Army today, by both light and heavy forces. With the increased number of deployments to various contingency areas, it is important that these lessons be disseminated to the field. Innovations need to be publicized so that, instead of reinventing them, other units can improve upon them and go on to share their own innovations.

Captain John R. Sutherland, III commanded a company in the 24th Infantry Division during Operation DESERT STORM and served as an observer-controller at the National Training Center. He is now an Infantry Officer Advanced Course small group instructor. He is a 1983 ROTC graduate of Northern Arizona University.

FIFTY YEARS AGO IN WORLD WAR II
May-June 1945

The spring of 1945 saw the end of the war in Europe, as remnants of the once-formidable Wehrmacht scrambled to avoid capture by Soviet forces bent on avenging the staggering military and civilian losses they had sustained over the past four years. The first large-scale capitulation came on 2 May, with the surrender of all German forces in Italy to the U.S. 15th Army group. The official instrument of surrender was signed by representatives of the German High Command at Reims, France, on 7 May, to become effective on 9 May.

In the Pacific Theater, Japanese dreams of victory had long since been replaced by the inevitability of defeat, and remaining Imperial forces continued to hold out in bitter, last-ditch fighting that took a heavy toll on the U.S. and Allied soldiers, sailors, and Marines who were relentlessly closing the circle.

These and other highlights of the closing days of World War II are excerpted from Bud Hannings' superb chronology,* A Portrait of the Stars and Stripes, Volume II, *available for $50.00 from Seniram Publishing, Inc., P.O. Box 432, Glenside, PA 19038.

1 May *U.S. offensive operations in Germany are halted in the U.S. Ninth Army area as masses of German soldiers surrender, preferring capture by the Americans to capture at the hands of the Russians.*

3 May *The Japanese launch a full-scale counterattack against U.S. ground and naval forces on and around Okinawa, hitting the fleet with Kamikaze aircraft and attempting two amphibious landings to flank American units already ashore. U.S. Army and Marine Corps forces destroy nearly all of the landing craft, killing nearly 800 of the enemy. U.S. Navy losses are high; three destroyers are sunk, and three other destroyers, a light cruiser, and four other vessels are damaged.*

25 May *The Joint Chiefs of Staff approve plans for Operation OLYMPIC, the invasion of the Japanese home islands, which is tentatively set for 1 November 1945.*

6 June *Staff Sergeant Howard E. Woodford, Company I, 130th Infantry, 33d Infantry Division, takes charge of a group of Filipino guerrillas, pinned down by heavy Japanese fire, and succeeds in penetrating the enemy lines. The following day, the Japanese hurl a predawn Banzai charge against his position, wounding Sergeant Woodford, who calls in mortar fire until his radio is destroyed. Relying on his own rifle fire, he rallies the guerrillas and holds on. At the end of the fight, he is found dead in his position, with 37 Japanese dead to his front. He is posthumously awarded the Medal of Honor.*

19 June *Japanese forces that have held Wake Island since December 1941—one of their first gains of the war—are subjected to a relentless pounding by planes of Rear Admiral R.E. Jennings' Carrier Task Force.*

22 June *The Stars and Stripes are officially raised over Okinawa, opening the way for the invasion of Japan. The cost has been high, with more than 12,500 Americans killed or missing and another 36,600 wounded. Total Japanese casualties are estimated at 110,000 dead and 7,400 captured.*

30 June *The Luzon Campaign ends, with the U.S. Eighth Army assigned responsibility for mopping-up operations.*